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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,164	07/03/2003	John R. Forgue	564AM (2681.3150.002)	9165
23399	7590	08/11/2004	EXAMINER	
REISING, ETHINGTON, BARNES, KISSELLE, P.C.			FRANK, RODNEY T	
P O BOX 4390			ART UNIT	PAPER NUMBER
TROY, MI 48099-4390			2856	

DATE MAILED: 08/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/613,164

Applicant(s)

FORGUE, JOHN R.

Examiner

Rodney T. Frank

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 6 Oct 2003
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_

Kr.B.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benghezal et al. (U.S. Patent Number 6,588,269; hereinafter referred to as Benghezal). Benghezal discloses the invention concerns a device for measuring liquid level, comprising a detection set (Si) including two piezoelectric cells (10, 12) associated with control means for transmitting ultrasonic waves respectively opposite a reference reflector (16), located at a known distance (D) from the associated cell, and from the top surface (14) of the liquid, and processing means for determining the level of liquid by operating on the respective propagation times of the ultrasounds emitted by each of the two cells (10, 12). The invention is characterised in that it comprises means for defining, after the device has been charged, an initialising phase (1100, 1100 bis) during which the control means control the piezoelectric cells (10, 12) such that the ratio between the excitation rate of the reference cell (12) and that of the level-measuring cell (10) is higher than the ratio between those same rates during the subsequent stabilised measuring phase (1300) (Please see the abstract).

In reference to claim 1, a fluid level sensor for use in a fluid container, comprising a single ultrasonic transceiver having a measurement section and a reference section separated, said measurement and reference sections are each able to both transmit and receive ultrasonic signals, and a housing component having both a reference element and an aperture axially spaced from

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said ultrasonic transceiver, wherein said measurement section transmits ultrasonic measurement signals that pass through said aperture to reflect off of a fluid surface, and said reference section transmits ultrasonic reference signals that reflect off of said reference element is disclosed and shown with respect to figures 1 and 2.

In reference to claim 2, the measurement section and aperture are shown in figure 2 to be disk-shaped and the reference section is ring shaped and are both generally concentric.

In reference to claim 3, Benghezal in figure 1 the relationship whereby measurement signals pass through an aperture and the reference signals reflect off the underside of the reference element.

In reference to claim 4, it is disclosed in column 2 lines 34-42 that the cells have metallizations.

In reference to claim 5, since each portion is separate, then their being energized separately as well would be obvious to one of ordinary skill in the art.

In reference to claim 6, it is disclosed the device is a piezoelectric one.

In reference to claims 7-9, though these features are not implicitly disclosed or shown in the Benghezal reference, these limitations are well known to one of ordinary skill in the art and are viewed as obvious design choices as, for example, it is well known to use an impedance matching layer with PZT type transducers in order to obtain an accurate liquid measurement.

In reference to claims 10-15, though these limitations are not explicitly disclosed in Benghezal, these limitations are viewed as mere design choices of the applicant as these limitations do not provide for any improvement upon or an unexpected result in light of the prior art of record.

In reference to claims 16-18, the device of the Benghezal reference is disclosed to operate with a controller. Though the specific operation of the controller may not be explicitly disclosed in the reference, the controller operation is deemed as an obvious design choice to one of ordinary skill in the art.

In reference to claim 19, Benghezal discloses a fluid level sensor for use in a fluid container, comprising an ultrasonic transceiver having a generally disk-shaped measurement section and a generally ring-shaped reference section, said measurement and reference sections are each able to both transmit and receive ultrasonic signals, an impedance layer located adjacent said ultrasonic transceiver such that ultrasonic signals transmitted by said measurement and reference sections pass through said impedance layer, and a housing component having both a reference element and an aperture axially spaced from said ultrasonic transceiver, wherein said measurement section transmits ultrasonic measurement signals that pass through said impedance layer, the fluid and said aperture such that they reflect off of a fluid surface, and said reference section transmits ultrasonic reference signals that pass through said impedance layer and the fluid such that they reflect off of said reference element is disclosed.

In reference to claim 20, the measurement section and aperture are shown in figure 2 to be disk-shaped and the reference section is ring shaped and are both generally concentric.

In reference to claims 21 and 22, multiple metallizations are disclosed and connecting the metal layer to a lead in order to excite the ultrasonic sensor is well known in the art.

In reference to claims 23-26, the operation of the device disclosed in Benghezal is in the same vain as the current invention.

In reference to claims 27 and 28, these limitations are viewed as obvious design choices to one of ordinary skill in the art.

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In reference to method claims 29-39, though the method of operation of the device in Benghezal is not explicitly disclosed to be exactly like the method in the present application, it is viewed to be similar in nature whereby the differences are not shown to give any improvement or unexpected result over the Benghezal reference, and are therefore considered as either roughly disclosed or obvious to one of ordinary skill in the art.

In reference to claim 40, a fluid level sensing system for use with a fluid container, comprising a fluid level sensor mounted towards the bottom of the fluid container, said sensor comprising an ultrasonic transceiver having generally concentric measurement and reference sections that are each capable of both transmitting and receiving ultrasonic signals within a fluid, and a housing component that at least partially surrounds said ultrasonic transceiver and has both a reference element and an aperture, said measurement section transmits ultrasonic signals that pass through the fluid and said aperture to reflect off of a fluid surface and said reference section transmits ultrasonic signals that pass through the fluid to reflect off of said reference element, and an electronic controller, wherein said controller is capable of providing a signal velocity calibrated measurement of the fluid level within the fluid container that is based upon said ultrasonic signals provided by said measurement and reference sections is disclosed by Benghezal.

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The examiner has cited various references that are viewed as relevant to the general state of the art of the present invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney T. Frank whose telephone number is (571) 272-2193. The examiner can normally be reached on M-F 9am -5:30p.m..

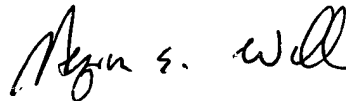
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RTF

August 5, 2004

A handwritten signature in black ink, appearing to read "Hezron E. Williams", with a long horizontal line extending to the right.

HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800